

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2005/001036

International filing date (day/month/year)
18.03.2005

Priority date (day/month/year)
19.03.2004

International Patent Classification (IPC) or both national classification and IPC
G01F23/38

Applicant
FIRST INERTIA SWITCH LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2005/001036

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. II Priority

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43bis.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2005/001036

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or
Industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-17
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-17
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V.

Reference is made to the following documents:

D1: US 2004/003660 A1 (FUKUHARA TOSHIKI ET AL) 8 January 2004
(2004-01-08)

D2: US 6 593 734 B1 (GANDEL PIERRE ET AL) 15 July 2003 (2003-07-15)

1 INDEPENDENT CLAIM 1

The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of **claim 1** does not involve an inventive step in the sense of Article 33(3)PCT.

- 1.1 Document **D1**, which is considered to represent the most relevant state of the art to the subject matter of **claim 1**, discloses (the references in parentheses applying to this document, see figures 1 and 3):

A fuel level sensor (20) having a magnetic position sensor (21) connected to an arm (26) for attachment to a float (25), wherein the magnetic position sensor comprises a stator (31) and a movable part (22 + 23), the stator having two soft magnetic pieces defining an air gap, which contains a magnetosensitive probe (32) for measuring the variation in induction in the gap, the moveable part comprising a magnet (23) around an axis (22).

- 1.2 The subject-matter of independent **claim 1** differs from the disclosure of **D1** in that **claim 1** describes that the movable part comprises a yoke of soft magnetic material displaceable parallel to the magnetic pieces of the stator, and a magnet partly embedded in a cavity in the yoke facing the stator, the poles of the magnet being polarized perpendicularly to direction of movement of the moveable part relative to the stator.

- 1.3 The problem to be solved by the present invention may therefore be regarded as *How to mount a magnet such that the rotation of the float arm changes the magnetic*

field in the air gap, to be detected by the magnetosensitive probe?

- 1.4 In view of document **D2** the solution proposed in **claim 1** of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

Document **D2** discloses (the references in parentheses applying to this document, see figures 1 and 2):

A magnetic position sensor, wherein the magnetic position sensor comprises a stator and a movable part, the stator having two soft magnetic pieces (3,4) defining an air gap (9), which contains a magnetosensitive probe (10) for measuring the variation in induction in the gap, the moveable part comprising a yoke (5) of soft magnetic material displaceable parallel to the magnetic pieces of the stator, and a magnet (8) partly embedded in a cavity (6) in the yoke facing the stator, the poles of the magnet being polarized perpendicularly to direction of movement of the moveable part relative to the stator.

- 1.5 It is well known that liquid level sensors using a float attached to a rotating arm, use rotary position sensors for the determination of the rotation angle, which is a measure for the liquid level. Therefore the features disclosed in **D1** and **D2** would be combined by the skilled person, without exercise of any inventive skills in order to solve the problem posed. The proposed solution in independent **claim 1** thus cannot be considered inventive (Article 33(3) PCT).

2 INDEPENDENT CLAIM 15

The wording of **claim 15** is vague and unclear and leaves the reader in doubt as to the meaning of the technical features to which it refers, thereby rendering the definition of the subject-matter of said claim unclear, Article 6 PCT.

Also, the present application does not meet the criteria of Article 33(1) PCT, because

regardless of the above-mentioned lack of clarity, the subject matter of **claim 15** cannot involve an inventive step in the sense of Article 33(3)PCT, following the same reasoning as for **claim 1**.

3 DEPENDENT CLAIMS 2-14, 16, 17

Dependent **claims 2-14, 16, 17** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(2) and (3) PCT).

4 FURTHER OBSERVATIONS

- 4.1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in document **D1** is not mentioned in the description, nor is this document identified therein.
- 4.2 Independent **claim 1** is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document **D1**) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 4.3 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).